7811

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"VERY DISTANT" HOST INTERFACE

The normal method of connecting a Host computer to the ARPA Network is, and will continue to be, placing an IMP at the Host site and making a short-distance hard-wire connection. However, during the past several months we have become increasingly aware of the occasional desire to interface a Host to some IMP via a long-distance connection (where long-distance, in this context, is any cable run longer than 2000 feet but may typically be tens of miles) via either a hard-wire or telephone circuit. We believe that any good solution to the general problem of interfacing Hosts to IMPs must satisfy at least the following criteria:

1) The characteristics of the connection should be such that the undetected error rate can be expected to be <u>extremely</u> low.

2) The bandwidth of the connection should not be <u>intrinsically</u> limited to a low value.

3) The nature of the connection should be such that the Host may establish multiple network "conversations", i.e., it should have all the power of a normal Host connection.

These criteria were briefly discussed in our earlier RFC #241 (NIC #7671), *Connecting Computers to MLC Ports*.

After a careful review of the various possibilities for "very distant" Host connection, we have arrived at a preliminary design for this type of interface which we believe should prove satisfactory with regard to the criteria above. Although detailed specifications will not be available for some time, the basic elements of the design are as follows:

Transmission will be full-duplex and will use the same Binary Synchronous format that is presently used in inter-IMP communication. At the IMP end, a hardware interface identical in type, but not necessarily in speed, to the usual IMP 50 kilobit modem interface will be used. This interface frames blocks of outgoing data with special characters and appends a 24 bit cyclic redundancy check (CRC). It de-frames and checks incoming blocks which must be of similar format. The Host must provide mating formatting, de-formatting and checking facilities at its end.

In conjunction with the CRC creation and checking, the IMP will be provided with a small amount of "retransmission" software as a front (i.e., Host side) end for the usual Host/IMP interface software. The retransmission scheme, although not presently completely defined, will be based on positive acknowledgment/ timeout techniques.

The Host will be required to provide a front (i.e., IMP side) end to its NCP which can generate CRCs and test for CRC errors, provide simple retransmission logic, etc. This front end may be implemented in Host software, by means of special purpose hardware, in a minicomputer, or in any other way which the Host organization finds reasonable.

This new type of interface will be completely documented, from both a hardware and software point of view, as soon as the detailed design is completed. This documentation will probably take the form of an update to BBN Report No. 1822.

We will be happy to discuss this type of interface with any interested organization, although it should be remembered that detailed design is not yet completed.

AMcK:jm